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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/888,365	06/22/2001	Stephen DeOrnellas	TEGL-01092US1	8894
23910	7590	11/29/2007		
FLIESLER MEYER LLP 650 CALIFORNIA STREET 14TH FLOOR SAN FRANCISCO, CA 94108			EXAMINER ALEJANDRO MULERO, LUZ L	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 11/29/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/888,365	Applicant(s) DEORNELLAS ET AL.	
	Examiner Luz L. Alejandro	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19, 67-75, 84-86 is/are pending in the application.
- 4a) Of the above claim(s) 86 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19, 67-75, and 84-85 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of specie A in the reply filed on 08/31/07 is acknowledged.

Claim 86 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected specie, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19, 67-75, and 84-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al., U.S. Patent 5,556,501 in view of DeOrnellas et al., WO 99/25568.

Collins et al. shows the invention as claimed including a method of operating an etch reactor which comprises a reactor chamber 16B, an upper electrode 17T/17S of aluminum with power applied thereto from a RF source 40, at least one side electrode 12, a first heater 96 that heats said upper electrode, and a second heater 92 that heats said at least one side electrode (see fig. 1 and col. 7-lines 45-50), and gas inlets and outlets, the method comprising: introducing process gas into said chamber 16B, and heating the upper electrode with said first heater to a temperature such that any

material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements (see, fig. 1 and its description), and heating the at least one side electrode with the second heater. For a complete description see fig. 1 and its description and col. 21-line 43 to col. 22-line 43.

Collins et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. However, it should be noted that Collins et al. discloses that the apparatus of fig. 1 can be used to etch a variety of materials including etching metals (see col. 6-line 28). DeOrnellas et al. discloses a similar three electrode configuration as in Collins et al. (see fig. 7) where platinum or other materials are etched in a chlorine gas and oxygen is inherently present in the chamber (see page 8, line 25 to page 9, line 17). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Collins et al. so as to performing the platinum etching process of DeOrnellas et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Moreover, note that the process of Collins et al. modified by DeOrnellas et al. includes a process where platinum and one or both of oxygen and chlorine are deposited on the upper electrode, and the layer of material formed on the upper electrode is more stable than a layer of material formed when heating the upper electrode with said heater to a temperature insufficient to cause deposits of oxygen and

chlorine to de-sorb from the upper electrode.

Furthermore, both Collins et al. and DeOrnellas et al. are applied as above but fail to expressly disclose heating the upper electrode or the side electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955).

Concerning claim 84, note that inherently any gas collected on the upper surface will de-sorb or boil off from the surface as a result of heating of these surfaces:

Claims 19, 67-75, and 84-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al., U.S. Patent 5,556,501 in view of Keizo, JP 07-130712A.

Collins et al. shows the invention as claimed including a method of operating an etch reactor which comprises a reactor chamber 16B, an upper electrode 17T/17S of aluminum with power applied thereto from a RF source 40, at least one side electrode 12, a first heater 96 that heats said upper electrode, and a second heater 92 that heats said at least one side electrode (see fig. 1 and col. 7-lines 45-50), and gas inlets and outlets, the method comprising: introducing process gas into said chamber 16B, and

heating the upper electrode with said first heater to a temperature such that any material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements (see fig. 1 and its description), and heating the at least one side electrode with the second heater. For a complete description see fig. 1 and its description and col. 21-line 43 to col. 22-line 43.

Collins et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. However, it should be noted that Collins et al. discloses that the apparatus of fig. 1 can be used to etch a variety of materials including etching metals (see col. 6-line 28). Keizo discloses performing plasma etching of platinum using a chloride containing gas (see abstract). Furthermore, note that inherently oxygen will be present in the chamber. In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Collins et al. so as to performing the platinum etching process of Keizo et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Moreover, note that the process of Collins et al. modified by Keizo includes a process where platinum and one or both of oxygen and chlorine are deposited on the upper electrode, and the layer of material formed on the upper electrode is more stable than a layer of material formed when heating the upper electrode with said heater to a

temperature insufficient to cause deposits of oxygen and chlorine to de-sorb from the upper electrode.

Furthermore, both Collins et al. Keizo are applied as above but fail to expressly disclose heating the upper electrode or the side electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[VV]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454,456, 105 USPQ 233,235 (CCPA 1955).

Concerning claim 84, note that inherently any gas collected on the upper surface will de-sorb or boil off from the surface as a result of heating of these surfaces.

Claims 19, 67, 69-70, 72-75, and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of DeOrnellas et al., WO 99/25568.

Imai et al. shows the invention substantially as claimed including a method of operating an etch reactor which comprises a reactor chamber 7, an upper electrode 5, a heater 11 that heats said upper electrode, and gas inlets and outlets comprising: introducing process gas into said chamber 7, and heating the upper electrode with said heater 11 to a temperature such that any material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements

(see fig. 1 and abstract).

Imai et al. is applied as above but fails to expressly disclose a platinum or non-volatile etch method where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. DeOrnellas et al. discloses where platinum or other materials are etched in a chlorine gas and oxygen is inherently present in the chamber (see page 8, line 25 to page 9, line 17). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. so as to perform the platinum etching process of DeOrnellas et al. because this would be a suitable method, for example, to reduce the platinum deposits that can form on the wafer.

Moreover, note that the process of Imai et al. modified by DeOrnellas et al. includes a process where platinum and one or both of oxygen and chlorine are deposited on the upper electrode, and the layer of material formed on the upper electrode is more stable than a layer of material formed when heating the upper electrode with said heater to a temperature insufficient to cause deposits of oxygen and chlorine to de-sorb from the upper electrode.

Furthermore, Imai et al. and DeOrnellas et al. both fail to expressly disclose heating the upper electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or

temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Concerning claim 84, note that inherently any gas collected on the upper surface will de-sorb or boil off from the surface as a result of heating of these surfaces.

Claims 68, 71, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in View of DeOrnellas et al. as applied to claims 19, 67, 69-70, 72-75, and 80-84 above, and further in view of Collins et al., U.S. Patent 5,556,501.

Imai et al. and DeOrnellas et al. are applied as above but fail to expressly disclose providing power to the upper electrode and a three electrode structure with a side electrode which is heated by a second heater, as well as an upper aluminum electrode. Collins et al. discloses an upper electrode 17S, 17T constructed of aluminum with power applied thereto from a RF source 40 and heated by a first heater 96 and an alternative embodiment in which a three electrode structure has a side electrode formed from the walls, wherein the side electrode is heated by a second heater 92 (see fig. 1 and its description, and col. 21-line 43 to col. 22-line 43). Therefore, in view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. modified by DeOrnellas et al. so as to provide power to the upper electrode of aluminum, use a three electrode structure and heating the side electrode with a second heater, as disclosed by Collins et al.

because providing power to the upper electrode allows for the flexibility of both inductive and capacitive coupling during the etching process, the three electrode process allows for additional process control and enhancement and heating the side walls provides controllability of the temperature and of the process (see col. 21 -lines 44- 46).

Claims 19, 67, 69-70, 72-75, and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of Keizo, JP 0.7-130712A.

Imai et al. shows the invention substantially as claimed including a method of operating an etch reactor which comprises a reactor chamber 7, an upper electrode 5, a heater 11 that heats said upper electrode, and gas inlets and outlets comprising: introducing process gas into said chamber 7, and heating the upper electrode with said heater 11 to a temperature such that any material resulting from the reaction deposited on the surface of the upper electrode forms a stable film comprising halogen elements (see fig. 1 and abstract).

Imai et al. is applied as above but fails to expressly disclose a platinum etch method or where oxygen and chlorine are present in the reactor and heating the upper electrode causes deposits of oxygen and chlorine to de-absorb from the upper electrode in order to leave mostly platinum deposited on the surface. Keizo discloses performing plasma etching of platinum using a chloride containing gas (see abstract). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. so as to perform the platinum etching process of Keizo because this would be a suitable method, for example, to

reduce the platinum deposits that can form on the wafer.

Moreover, note that the process of Imai et al. modified by Keizo includes a process where platinum and one or both of oxygen and chlorine are deposited on the upper electrode, and the layer of material formed on the upper electrode is more stable than a layer of material formed when heating the upper electrode with said heater to a temperature insufficient to cause deposits of oxygen and chlorine to de-sorb from the upper electrode.

Furthermore, Imai et al. and Keizo both fail to expressly disclose heating the upper electrode to a temperature of about 300 Celsius to about 500 Celsius. However, a prima facie case of obviousness still exists because generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Concerning claim 84, note that inherently any gas collected on the upper surface will desorb or boil off from the surface as a result of heating of these surfaces.

Claims 68, 71, and 85 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imai et al., WO 97/27622 in view of Keizo, JP 07-130712A as applied to claims 19, 67, 69-70, 72-75, and 84 above, and further in view of Collins et al., U.S. Patent 5,556,501.

Imai et al. and Keizo are applied as above but fail to expressly disclose providing power to the upper electrode and a three electrode structure with a side electrode which is heated by a second heater. Collins et al. discloses an upper electrode 17S, 17T of aluminum with power applied thereto from a RF source 40 and heated by a first heater 96 and an alternative embodiment in which a three electrode structure has a side electrode formed from the walls, wherein the side electrode is heated by a second heater 92 (see fig. 1 and its description, and col. 21-line 43 to col. 22-line 43). Therefore, in view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the process of Imai et al. modified by Keizo so as to provide power to the upper electrode of aluminum, use a three electrode structure and heating the side electrode with a second heater, as disclosed by Collins et al. because providing power to the upper electrode allows for the flexibility of both inductive and capacitive coupling during the etching process, the three electrode process allows for additional process control and enhancement and heating the side walls provides controllability of the temperature and of the process (see col. 21-lines 44-46).

Response to Arguments

Applicant's arguments filed 05/23/07 have been fully considered but they are not persuasive. Applicant argues that Collins et al. does not disclose the heating of the upper electrode step of claims 19 and 67-68. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking

references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Furthermore, the examiner respectfully submits that, as discussed above, the Collins et al. reference discloses that the etching process can be used to etch metals as well as silicon. Additionally, DeOrnellas et al. discloses etching using a similar apparatus that is used to etch platinum. For at least these reasons, the examiner respectfully submits that the method of Collins et al. modified by DeOrnellas et al. renders a prima facie case of obviousness over the claims 19, 67-75, and 84-85.

In response to applicant's argument that the Collins et al. and DeOrnellas et al. references fail to teach heating for the purposes of de-absorption of oxygen and chlorine from the upper electrode, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Similarly to above, the examiner also submits that the rejection under 35 USC 103 of Collins in view of Keizo is also proper.

With respect to the rejection of Imai in view of DeOrnellas et al., applicant argues that neither Imai or DeOrnellas et al. teaches the de-absorption step. However, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA

1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Furthermore, it is believed that the combination of Imai with the DeOrnellas et al. reference will teach the de-absorption step due in part to the heating of the upper electrode in Imai.

Furthermore, for at least the reasons expressed above, it is believed that the additional rejections of record are also deemed proper and are maintained.

Conclusion

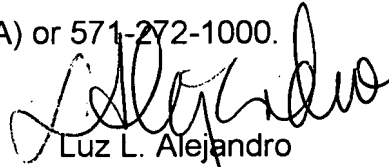
THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luz L. Alejandro whose telephone number is 571-272-1430. The examiner can normally be reached on Monday to Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Luz L. Alejandro
Primary Examiner
Art Unit 1792

November 23, 2007